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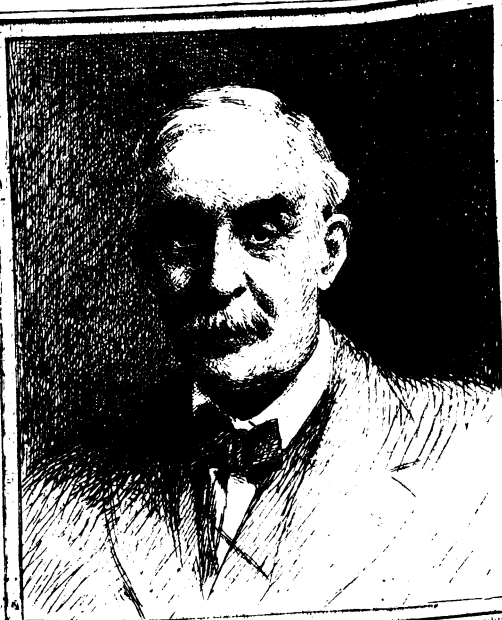
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AN INTRODUCTION
TO THE STUDY
OF
LOGIC AND METAPHYSICS.

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OF OXFORD.

"The discovery of what is true, and the practice of that which is
good, are the two objects of Philosophy."—*Voltaire*.

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TO MY WIFE

I DEDICATE

THIS LITTLE VOLUME.

PREFACE .

ALTHOUGH it is customary to publish Novels and other works coming within the class called "Light Literature," or "Belles Lettres," *without* a Preface, it is the reverse with regard to books intending to impart information, such, for instance, as works of History, Philosophy, Theology, Science, &c. We have become so accustomed to see prefaces in volumes of a deeper character, that a work of this description would look almost strange without an introductory chapter or paragraph.

There is, however, no need for me to say anything here, excepting by way almost of apology for publishing so fragmentary and

incomplete a book. The fact is, that when it was begun, the intention was to go much more largely into the matter; but various circumstances have for some time delayed the completion of the work. It has therefore been decided to issue this instalment at once, rather than to wait longer for the remainder.

The greater part of the chapter on Causation has appeared in an earlier work.

T. S. BARRETT.

NORMAN VILLA, ELM GROVE,
PECKHAM.

April 5, 1875.

ON THE CONDITIONS
OF
HUMAN KNOWLEDGE.

How often it is the case that what are thought to be important disputes, are in reality nothing but disputes about the meaning of words! In Politics, for instance, a fierce discussion may take place between a *soi-disant* Conservative and a *soi-disant* Liberal on the comparative merits of the two parties represented, when perhaps if the disputants were unbiassed by party feeling they would perceive that they were very much of one mind, and that the reason of the apparent disagreement was in consequence of their attaching different significations to the words *Conservative* and *Liberal*. In Theology, again, how frequent are the disputes that arise from the misunderstanding of a word! whilst in topics

called *metaphysical* the difficulty of one side understanding the other has become proverbial. Indeed, so well is it known that the origin of disputes can generally be traced to each side mistaking the meaning of the other, that the word *misunderstanding* has at length become one of the synonyms of the word *quarrel*. If any one, therefore, is desirous of distinguishing himself as a logician or philosopher, before all things it is necessary that he make the meanings of the words he uses, clear both to himself and to others.

Now we shall find that the same fatal ambiguity has constantly been attached to the word *Logic*. Some writers have expressed it as their opinion that the study of logic is barren and profitless: others have lauded logic up to the skies as *par excellence* the Science of the Sciences. How is this? It is simply because nine times out of ten they have all meant something different by the word. Thus, for example, Aristotle's Logic and Mill's Logic are two totally different things. Until very lately the term Logic was applied solely to what is now beginning to be distinguished as *Formal Logic*, *Deductive Logic*, and so forth. But modern writers, such as Professor Bain, or

the late John Stuart Mill, apply the word to a far more extensive field of inquiry.

The mediæval schoolmen were, no doubt, honestly of opinion that the Analytics of Aristotle was the instrument or *organon* of truth. But from the time that Bacon brought out his *new Organum*, the old logic began gradually to fall year by year more into disfavour. It was seen that no new truth could be gained by means of the old logic, the conclusion of every syllogism being in fact contained in the premisses, and therefore no advance could be made beyond those premisses. And although it has been many years before this was openly put into words and taught, yet the practical effects resulting from a study of the Inductive Sciences were seen to be so much more than anything that could arise from the study of the old logic, that the latter became at length almost discontinued to give way to its rival.

But now there has been at last a partial reaction. It is now wished to retain the old word, Logic, but to extend its meaning so as to include many things that formerly would have been deemed foreign to the subject. As an example, take one of the latest modern manuals of logic—Professor Bain's—and it

will be seen that two-thirds of the work are devoted to Induction, whilst only one-third is given to Deduction.

The difference, therefore, between the modern and the old logic is simply this: We accept the ancient definition of the science, but extend the subject-matter to accord therewith. We say to the old logicians, in effect: Yes, let it be granted that the term logic be applied to denote the instrument of all truth; if you will, even *καλονική* (after the Epicureans)—the criterion to judge between truth and falsehood; but we must for this very reason extend the science. The object and its definition must of necessity coincide.

We can now define Logic and at the same time be in strict unison with the old writers on the subject. Logic is that branch of study to be pursued before entering the boundless realms of science,—a study of the limits of the human understanding,—a study of the laws of evidence,—a study for the right directing of our reasoning, observing and other intellectual faculties. “The sole object of Logic,” says Mr. Mill (*‘System of Logic,’* *Introd.*, § 3) “is the guidance of one’s own thoughts: the communication of those thoughts to others falls

under the consideration of Rhetoric in the large sense in which that art was conceived by the ancients; or of the still more extensive art of Education. Logic takes cognizance of our intellectual operations, only as they conduce to our own knowledge, and to our command over that knowledge for our own uses. If there were but one rational being in the universe, that being might be a perfect logician; and the science and art of logic would be the same for that one person as for the whole human race." When this is generally understood, the study of logic will no doubt be revived. This practical age will not fail to see the immense utility of a science which teaches the force of evidence and the way to sift fact from fiction. Indeed, since the appearance of Mr. Mill's work, this return to the study has already taken place to a very large extent. While it was believed that Logic was merely a useless disquisition on mood and figure, syllogism and enthymeme, barbara, cesare and darapti, the subject naturally fell into disrepute and neglect. Let us hope that *Nous avons changé tout cela* may be now said with truth.

The opinion of Dr. Mansel and others.—
Dr. Mansel and others, it is true, have de-

murred at the plan of making Logic embrace so many topics once deemed foreign to it. Dr. Mansel even went so far as to endorse Kant's assertion that a criterion of material truth is not possible. But if so, there can be no such science as Logic at all in the sense of an organon; and the study, narrowed to the Analytics of Aristotle, must come down from the pedestal its votaries have placed it on.

A, criterion of truth, what.—But perhaps if we were to examine thoroughly into this apparently very great difference of opinion, we should find that the dispute is entirely owing to a misunderstanding about the word *criterion*. If by criterion be meant a cut-and-dried rule by which we can measure and test the truth of a proposition, then, to be sure, there can be no such criterion; and it cannot be supposed that any one ever advocated the existence of such a thing. But when those who would include induction among the proper topics of logic, put forward their science as a criterion or organon for the discovery of truth, they are evidently using the expression or expressions (as most words are used in abstract studies) just a little figuratively. We may, in the same way, say

that the criterion or test of the truth of the 47th proposition of the 1st book of Euclid is to be found in the demonstration given and in the demonstration of all the previous propositions employed as premisses. So, when Logic is spoken of as a criterion of the truth of our various beliefs, it must be understood to mean that Logic furnishes the first principles or data on which the truth of all possible science must depend.

From all this it follows that the word Logic (with the extended signification in which it is now used) may be defined as the Science of the Conditions of Human Knowledge.

But what *is* Knowledge? It is more than true belief. A person may happen to hit upon a truth by means that do not justify belief. A man may believe something on insufficient grounds, which may, nevertheless, turn out correct. But if the belief in such a fact is based on erroneous or insufficient premisses, we should not say that the man *knew* it to be true. Again, a child believes all that it is told; but it cannot be said to *know* the things taught in that way. At so early an age, it believes blindly and not rationally.

Dr. Whately defined knowledge agreeably

to these considerations. "Knowledge," he says, "implies three things: 1st. Firm belief; 2nd. Of what is true; 3rd. On sufficient grounds. If any one, *e.g.*, is in doubt respecting one of Euclid's demonstrations, he cannot be said to know the proposition proved by it; if, again, he is fully convinced of anything that is not true, he is mistaken in supposing himself to know it; lastly, if two persons are each fully confident, one that the moon is inhabited, and the other that it is not (though one of these opinions must be true), neither of them could properly be said to *know* the truth, since he cannot have sufficient proof of it." *

How far Logic has to take notice of Language.—Sometimes Logic has been treated in manuals merely as the art of arguing. Were this the proper province of the science, Language, it cannot be denied, would be a most vital consideration. But, as Mr. Mill has observed, this branch of the subject belongs more to Rhetoric than to Logic. Logic is intended principally to guide one's own thoughts in the search after knowledge, and would, be

* *Elements of Logic*, Book iv., ch. 2, § 2, note.

useful to a man were there no other beings to dispute with. May we then say that Logic has not to take cognizance of language more than other abstract sciences have to do so? In all abstract subjects we have great need to be careful of language in this respect; namely, that they are studied by means of words; and the more abstract a topic is, the more risk there is of ambiguity creeping in, with, perhaps, the single exception of mathematics. *There* the abstract words are so few and so clearly defined that the possibility of a misunderstanding is reduced to a minimum. But in mental and moral philosophy, politics, and in some theologies, for example, confusion and disputes are constantly arising through the ambiguity of language used.

But in the study of the conditions of knowledge, language has especially to be considered. Language is not only a means of communication between one man and another; it is also an actual means of individual thought. It is true, we do not always think in words in the same way as we speak or "think aloud" in words. Images are often used in thought, and so is the recollection of previous sensations. These often take the place of words,

when we think,—so that it may be said that we frequently “imagine out” a thought or an argument, and arrive at our conclusion much quicker than if we had to do it in words. But in spite of all this there is an inseparable association in our minds between words and the things we use them to represent—and often quite unconsciously on our parts. The simple common nouns, ‘man,’ ‘boy,’ ‘dog,’ &c., cannot be learnt and apprehended except by means of some of the most important and abstract of the mental operations—for instance, comparison and classification. Indeed, it may almost be questioned whether a man never taught a language could, by means of ideas alone, ascend to any sort of knowledge superior to that possessed by the brutes. So intimate is the connection between language and the simplest kind of thought. It would be an interesting question, but one apart from our present purpose, to inquire whether we could attain to all our present knowledge without the aid of language—whether we are rational beings apart from being speaking animals—or whether, on the other hand, it is the possession of the faculty and art of language that alone raises us above the brute creation.

A true proposition is one intended to communicate, or to stand for a true thought or belief. But when the truth of a proposition is under consideration, it is very important to know the exact meaning of it. The inquiry into the truth of a proposition is, consequently, two-fold: first, whether the words express the idea; and, secondly, whether the idea is in conformity with fact. When the meaning of a proposition is thoroughly mastered, its truth may then be inquired into: but not until then. It is both futile and unphilosophical to debate the truth of a proposition, or to declare one's assent to it, or dissent from it, whilst the meaning is doubtful. For example: I am told it is my duty to believe the Athanasian Creed. I reply that it is simply impossible to have either belief or disbelief in it whilst it is not clearly comprehended by the understanding.

So with respect to all beliefs, whether true or false, when expressed in language. People often think they believe a proposition when, in reality, they are believing all the time quite a different one. For instance: they are under the impression that the Deity has imposed a certain proposition or dogma on them to believe; they do not understand the meaning of

it; they say it is a mystery that they must believe without understanding. And they really think they believe it. But no man can really believe a proposition the sense of which he does not understand; for a proposition without sense is not a proposition at all. A proposition is the representation in language of an idea; and where there is no idea, there can be no proposition. 'The part is greater than the whole;' 'Twice two is five,' &c., are pseudo-propositions. They are propositions only in form. They are not the equivalent or representation of any idea, and cannot be thought, or conveyed to another. The 'letter' of language is there, but the 'spirit' is wanting.

When, therefore, a person is under the impression he is believing a proposition which conveys no idea to his mind, he is in reality believing nothing of the sort. If a man were to say that he believed that 'twice two is five,' or that 'abracadabra is humpty-dumpty;' that he believed it in accordance with the commands of his Deity, but that he didn't pretend to understand the mystery—it is clear that he does not believe the dogma in question, but quite a different proposition, namely, that by the words of the dogma his Deity is intending a certain truth not revealed at present.

NECESSARY TRUTHS, &c.

Necessity is not a thing that can be perceived amongst phenomena. Order or regularity may be seen, but that neither *is* nor *proves* necessity. Some savages seem scarcely to have any idea of necessity at all; everything appears to them to be the mere effect of chance. The exercise of thought probably introduces into the mind the idea of some sort of necessity, from observing the effects of one's own will on the muscles. This idea, probably, after a time induces a belief in supernatural agency — the interference of deities in mundane affairs. The more civilized a people, the greater does their idea of necessity prevail in their conception of things; but not until they have cultivated more or less of abstract thought, do they believe in the existence of *necessary truths*.

The term, 'necessary truth,' is used to denote a fact that, *if true*, one sees *must* be true.

For example: There cannot be hills without valleys; two straight lines cannot enclose a space; twice two is four; the past cannot be recalled — all mathematical truths — and so forth.

A necessary truth and a certainty are not convertible terms. Many things I am certain of, yet they are not necessary facts. For instance: I am quite certain that I exist, or that I am thinking, yet neither of these facts would be called necessary truths. It is *true* that I exist; but I do not perceive the *necessity* of my existence as I do that of space or that of time.

Then, again, it is important that the words '*if true*,' in the definition given above of a necessary truth, be borne in mind. A necessary truth is not one that we see must be true, but one that we see must be true, *if true*. A person may not see the necessity of the truth of the 47th proposition of the first book of Euclid immediately it is enunciated to him; but after he has been through the demonstration, and perceives it *is* true, he sees it also *must* be true. Again, we see that the square of 476 *must* be 226,576 if it *is* 226,576. We are not all gifted as Bidder and Colburn

were, and therefore cannot see the truth of many mathematical propositions until we have worked them out; but when once they are demonstrated to our satisfaction we perceive they could not have been otherwise.

It may now be seen where Dr. Whewell and many others have made a mistake. In his *History of Scientific Ideas*, Dr. Whewell speaks of Necessary and Experiential Truths as forming an antithesis.* Dr. Whewell is here confounding *Necessary* with *Intuitive*. When we immediately perceive the truth of a proposition as soon as it is stated to us, such a proposition states what is an intuitive truth. Some intuitive truths are necessary: but some intuitive truths are *not* necessary truths, and some necessary truths are *not* intuitive. Thus, (taking the word 'contingent' to stand as the antithesis to 'necessary'; and 'experiential' or 'probable' as the opposite to 'intuitive'): the truth that I exist, is *intuitive* and *contingent*; the truth that 13 times 19 is 247 is *experiential* and *necessary*.

* Book i., chap. i., sect. 2.

INTUITIVE TRUTHS, &c.

WE have said that intuitive truths are truths that are seen *immediately*. Hence they are also called *immediate knowledge*. Now the antithesis to immediate knowledge is *mediate* knowledge; and that consists in knowledge obtained by experience, &c. We have therefore the following synonyms and antitheses :—

Intuitive truths.	Experiential truths.
Immediate knowledge.	Mediate knowledge.
Certain truths.	Probable truths.

There has always been more or less difference of opinion amongst men as to whether or not some propositions affirm *necessary* truths. For instance, some say the existence of a God is a necessary truth; others, on the other hand, say it is not. The reason of this is, that a necessary truth to a person is one that is *seen* by him to be necessary, and as we are more or less differently constituted, it sometimes happens that what is seen by one person is invisible to another.

For similar reasons the differences among metaphysicians as to what truths are *intuitive* are even more numerous than those as to what truths are *necessary*.

And this is one great secret of the failure of most systems of philosophy. A deep thinker erects a mighty structure on the basis of his own consciousness or of his own intuitions, forgetting that perhaps his next door neighbour may have a different consciousness and a different set of intuitions. The system of such a philosopher consequently is true only so far as it goes. It may be a perfect system of *his own* philosophy : but he is greatly in error if he calls his work the *Philosophy of the Human Mind*. It is merely the philosophy of *a* human mind.

Supposing I am in pain, my knowledge or consciousness of the fact is immediate knowledge. No logic is necessary to convince me thereof. I *feel* the pain, and that is an ultimatum in evidence beyond which it is impossible to go.

But although my dumb, unexpressed and silent suffering is immediate knowledge, can the same be said of the proposition 'I am in pain?' No; it is evident that the knowledge of the truth of the proposition is not immediate;

for its truth depends on whether the words 'I am in pain' are the right ones to express my meaning.

From this it follows that the knowledge of the truth of *no Proposition*, is certain. The knowledge of the truth of propositions depends, amongst other things, on whether the right words are used.

Is the knowledge of having the toothache, mediate or immediate? Certainly not immediate, for it is only by experience that we are able to localize pain. A new-born infant suffering from the toothache (supposing it to have teeth) would feel the pain, but would not know what part was affected. '*I am in pain*,' however, expresses immediate knowledge.

Immediate knowledge can only relate to the present. 'I am in pain at this moment,' expresses immediate knowledge; but, 'I was in pain at twelve o'clock yesterday,' is not so, as its truth depends on the accuracy of my memory.

Knowledge of the future of course is never immediate. This class of knowledge is most important. It embraces the Sciences of Astronomy, Mechanics, Physics, Chemistry, Biology, Medicine, &c., &c. This species of

knowledge is always conditional. 'There will be an eclipse of the sun to-morrow, *if the solar system be still in existence, and if the laws hitherto operating continue to act.*' And so on.

Knowledge of the past, also, cannot be immediate. It, too, is very important, embracing History, Geology, and all the recorded experiments or observations made in the sciences mentioned in the last paragraph. This knowledge is the basis of knowledge of the future. The predictions that are daily made in Astronomy, Mechanics, Chemistry, &c., are founded on the observation of the past.

From all this it may be seen that the *bulk* of our knowledge, if not absolutely all, depends more or less on probability. All past knowledge must so depend, and so must all future knowledge. Then, what is left? The present is infinitesimal. It is a mere point, dividing the infinite line Eternity into the two infinite parts called The Past and The Future. But it must nevertheless be the foundation of all our knowledge. All our knowledge, then, must depend on our present perceptions,—sensations, intuitions (if we have any), memory and all our various faculties and powers, of whatever name or kind.

Have we then any intuitions at all? If our present perceptions or feelings be considered intuitions, then we have. Beyond these we get on debateable ground. It is the fashion now-a-days to decry Locke. But it would be well if some of our modern mystics and idealists would really study the sound common-sense of that grand old writer. It is true he had some errors—who has not?—and his style is somewhat dry and scholastic; but for all that, I think we need, in the present day, to come down more, as he did—or at least desired to do—to First Principles.

The same old dispute that was rife in the days of Locke is prevalent still. Have we Innate Ideas or Intuitions? Locke held that no Belief is innate. It is true there is a slight difference in meaning between *innate* and *intuitive*: but practically they may generally be used as convertible terms.

If people assent to a proposition the moment it is enunciated, or act from their birth as if they believed it, without its ever having been taught them, this certainly is the same thing as its being *innate* as well as *intuitive*.

Many people who decry Locke think they can refute him in a sentence. They think it

enough to point to the Instincts of an infant. But what have Instincts to do with Propositions—with Innate or Intuitive ideas of (or belief in) propositions? The point in dispute is not whether Instincts, Sensations, Feelings, &c., are innate, but whether *Beliefs* are.

Then, again, taking the expression 'intuitive truths' to mean truths apprehended immediately, without the aid of experiment, experience, reasoning, calculation, or anything else, as contradistinguished from truths resting on probability, how is it possible, even supposing there are intuitive truths, to draw a hard and fast line between the two classes, and to say, These truths are intuitive and certain: those are experiential and probable? Probability is a thing of degrees. There is a low degree and there is a high degree of Probability. As Probability gets higher and higher it runs into certainty. How is it possible to distinguish between 'so-highly-probable-as-practically-to-be-certain' and 'absolutely-certain'?

To some this may seem an easy task: but that it is really a difficult one, witness the constant disputes amongst metaphysicians as to what truths are certain and intuitive and what not. Man is ever trying to classify and

draw sharp lines of demarcation between this and that, but Nature laughs at his finite knowledge and is constantly frustrating his endeavour. It is the same in all departments of science; species merges into species; one class glides by imperceptible steps into another; so that perfect classification is almost always impossible. In Natural History who can draw the line between Animal and Plant? and what disputes there have been and still are concerning the difference between Man and Ape. And in Chemistry the difficulty is often great to know whether a substance should be called an acid or a base, and whether a body should be classed with metals or with chlorine.

So there are many propositions concerning which there will always be disputes among metaphysicians—propositions that will sometimes be placed among those intuitively true, and sometimes among the probably true. One reason of this lies (as we have said) in the gradual running of propositions, *very quickly* apprehended as true, into those apprehended *absolutely immediately*. Another cause is to be found in the fact that many a proposition is seen to be true more quickly by one person than by another.

Is the knowledge that I have a pen in my hand, intuitive or probable? Probable, for it is possible to dream of having a pen in one's hand. And even if dreams were never dreamt, that would make no difference, for the belief in material things is an inference from our sensations, and therefore not intuitive. It is said that when Gaspar Hauser, the unfortunate being kept in darkness and solitary confinement until his 18th year, looked from a window for the first time in his life, he thought the scenery was a painting hanging from the wall. An infant, too, does not begin to show signs of a belief in outward objects until some time after the first use of its eyes. The stare of a new-born babe is quite vacant.

Mathematical Truths. — There have been some extraordinary geniuses (such as Bidder and Colburn), who possessed the faculty of mathematical and arithmetical insight to so wonderful a degree, that many propositions requiring much reasoning and calculation on the part of ordinary persons were assented to by them, as it were, by immediate intuition. And, as it has been before observed, people differ so largely in their quickness of perception that it is impossible to decide whether

certain propositions should be ranked among the intuitively or the probably true. Especially is this the case in respect to mathematical propositions. A proposition seen by one man at once to be true without requiring any reasoning to establish it, cannot be taken in by another without some demonstration.

The Propositions of Euclid.—Some of the propositions of Euclid are instances of this. To those who can see the 4th proposition immediately it is enunciated, it is intuitively true; but to those who cannot believe it until they have gone through the demonstration, it is probably true; for all truth based on reasoning must be probable. There are such things as sophisms; and people sometimes think a proposition is demonstrated when it is not. And one man's intuitions cannot possibly be accepted by another who does not share them.

Arithmetical Truths.—‘Twelve times twelve is 144’ is not intuitively true, being based on experiment, and known by us by means of our memory. ‘Twice two is four’ is also a truth of probability. A child long after it can count is unable to tell what twice two is without taking two twice and then counting afresh. But although ‘twice two is four’ is an expe-

riential and probable truth, its probability is extremely high—indeed *infinitely* high—so that, in effect, it is *practically certain*. The experience on which it rests is infinite, and can be verified mentally at any moment of our lives. Besides it is a *necessary truth*: *i.e.* if true, it *must* be true. And this necessity added to its infinite verifiability increases its probability, if possible, even more.

To strangers in the paths of Logic and Metaphysics, it must seem that much time is wasted over fruitless disputations concerning the right terms to apply to certain propositions—whether they should be called intuitive or probable. To some extent this condemnation is just. But though to the uninitiated the discussions in question may seem objectless, they must cease to appear so as soon as the important issues dependent on them are seen. When it can be shown to which class any belief belongs, a great step is taken towards the investigation of the evidence for it.

We discuss the *pros* and *cons* now of many a proposition once thought beyond doubt. This is inevitable, and is an effect of the intellectual activity of the age. During the infancy and dark ages of a race, people are

content to follow sluggishly in the beliefs of their ancestors. This is the theological stage. Then, for a season, comes the metaphysical period, when the old beliefs are pretty much retained, but are accounted for by the easy theory that they are innate or intuitive. Lastly, comes the age of scepticism and positive science, when the old beliefs are shaken to their foundations, and either refuted or re-established on a scientific basis.

'Tis clear the first step towards the settlement of the truth or falsity of a belief is to decide whether it is intuitive or otherwise. If intuitive, the investigation needs proceed no further. It would be folly to argue against what it is impossible not to believe. And so, in the transition state between the old era and the new, when the battle is fierce over old beliefs and old deities,—there is ever heard the defence of intuitivity put forth by the one side and assailed by the other.

Some years ago it was the fashion of metaphysicians to dub with the epithet of 'intuitive' every belief the origin of which they could not, or would not, trace. Nothing could have been more easy and convenient than this

method of procedure. It was a great saving of trouble, and afforded a way of answering in a few lines the arguments of obnoxious philosophers. It was as if chemists, in order to avoid analysis, were to reply that the substances given to them were all *elements* and therefore admitted of no analysis. At one time indeed the rapid increase in the number of so-called intuitive truths was perfectly alarming : but now, it must be confessed, in justice to the age, the number is gradually diminishing in consequence of the painstaking analysis of our present Psychological School of thinkers. The late John Stuart Mill, Professor Bain, and Mr. G. H. Lewes have done a great deal to bring about this re-action : but, after all, they are only the modern representatives and philosophical descendants of Locke, who answered the Intuitionists of his own time.

It must be borne in mind that if any one argues against the intuitivity, or against the necessity of a belief or truth, he is not therefore necessarily an unbeliever in respect to it. If I maintain that the proposition 'There is a God' is neither a necessary truth nor an intuitive truth, it does not follow that I believe there is no God. If it did, the con-

sequence would be that every truth is a necessary truth or an intuitive truth : or, that there is no such thing as a truth that is neither a necessary truth nor an intuitive truth : or, again, that there are no contingent truths and no experiential truths : which would be absurdly untrue.

CAUSATION.

It is scarcely necessary to mention the fact, so well known to students of logic and metaphysics, that ever since Hume published his *Treatise of Human Nature*, Causation has been the subject of incessant controversy among philosophers. We might perhaps say, ever since Locke wrote his *Essay concerning Human Understanding*; for this work, no doubt, suggested a great deal to Hume.

Locke taught the theory that all our ideas have their origin in our sensations; that we have no innate notions or any other inlet for knowledge whatever.

Locke, I know, is often defended from this imputation. He says (*Essay*, Bk. ii., c. 1, § 2) that our ideas have *two* sources, sensation *and* reflection; but as two paragraphs further on he defines reflection to be "the perception of the operations of our own minds within us, as it is employed about the ideas it has got" (*i.e.* by

means of sensation), that source seems to be made secondary; and sensation thus becomes the real primary source. There is, no doubt, much to be said on both sides of this question; but whether modern sensationalists are, or are not, the legitimate descendants of Locke, is a question we cannot discuss in this place.

The logical consequences flowing from this philosophy were little dreamt of by the great founder of modern sensationalism. Himself a religious man, and a firm believer in the existence of a God, his philosophy nevertheless is the source from which modern Atheism is chiefly drawn. If it can be proved that the whole of our knowledge comes to us solely through the medium of our five senses, all knowledge is rendered probable merely.

And if such a theory is true, all attempts to prove infallibly the existence of God are futile; for if all knowledge is probable only, it is evident we can at most merely attain to the knowledge that the existence of a Deity is probable.

Hume was the first to draw attention to this. Starting from the postulate that we have no grounds for believing anything the knowledge of which does not come to us through

experience, he argued that, therefore, we have no grounds for believing in causation at all. For, said he, "we have no other experience of cause and effect but that of certain objects, which have been always conjoined together." * We cannot see, and have not any experience of, any necessary connection or *nexus* between what is called a cause and what is called its effect.

Now the question remains, Are we right or wrong in thinking we can discern a necessary connection between some phenomena? In order to answer this we must inquire a little more particularly into the idea of necessity.

The primary idea of necessity is what is called by metaphysicians 'logical necessity.' It is a perception of what Professor Bain calls the 'Law of Consistency.' It is seen that certain things *must* accompany certain other things; otherwise there would be involved an inconsistency or contradiction. There cannot be hills without valleys; if the premisses of a syllogism are true, the conclusion must also be true; two straight lines cannot enclose a space;

* *Treatise of Human Nature*, Bk. i. Part iii. § 6.

and so on. With the perception of the absoluteness and unconditionality of such truths, dawns on the mind the idea of necessity, the notion of a 'must.' This once possessed, its transference to phenomena is easy.

The problem for us is to find what truth there is in the prevalent belief concerning causation: are we justified in transferring the attribute of necessity from axioms and demonstrated propositions to the relation between natural events?

If we divest ourselves of our acquired knowledge and beliefs, and imagine ourselves observing for the first time any succession or correlation of events, we shall see that there is nothing in them or their conjunction to tell us of power or necessity. It is only by witnessing the same combination of phenomena several times that we get the idea of invariability, and thence that of necessity.

For example: the phenomena of gravitation are so common and we are so used to them that we attribute a necessity to them. But if we had never before seen a body fall, there would be nothing in the descent of the first thing we saw fall pointing to any necessity. For all we could know to the contrary, the

objects might just as well have remained motionless, or have gone in any other direction than downwards.

Take any other case at random amongst phenomena; and it will be the same. We do not know the efficient cause of anything. We only know secondary or conditional causes, which, properly speaking, are not efficient causes at all. Scientific men are aware of this, and speak now of the 'conditions' of phenomena rather than of their 'causes.' For example: The insertion of zinc and copper, connected together in a certain manner, in diluted sulphuric acid, is called one of the causes or conditions of the production of the electricity, &c. But what right have we to assert that there is any necessary connection between the one and the other? None. In short we only know conditions. We do not know the *wherefore* of anything. The 'explanations' of phenomena, if made in order to assign the causes, are nothing but solemn scientific babble to cover our ignorance; but if made merely to inform us of the conditions or circumstances or uniformities which attend phenomena, they are useful so far, and serve to establish 'laws' or 'rules.'

There is a wide-spread misconception concerning the 'laws' of nature. They are spoken of as if they possessed power or force. One often hears a child's question, 'Why do things fall?' answered by—'Because of the law of gravitation;' as if the law of gravitation, instead of being a mere generalization from the facts to be explained, were a different thing altogether—a force of some kind. This is surely 'putting the cart before the horse.' It is equivalent to the following: 'Why did Mr. Smith die?' 'Because of the law of mortality.' The true answer to a child who asks why things fall to the ground, is this: 'No one knows. But it is an observed fact that, under certain circumstances, all bodies *do* fall.' Mr. Lewes has well exposed the meaninglessness of such explanations as 'Animals live because of their vitality,' 'Watches go because of their watch-force,' 'Things fall because of their falling force' (*i.e.* 'gravitation'). Mr. Mill, too, in his 'System of Logic' has explained the true nature of 'law.' Professor Bain and several other writers take the same position; and the Duke of Argyll gives an analysis of law which virtually amounts to the same view.

In short, 'law' is merely the name we give to generalizations—or, in logical language, to universal propositions that we believe to be true. 'This man is mortal' is a 'particular' proposition, and therefore no law; 'all men are mortal,' a universal proposition, is a law, a law of human nature. 'It is raining' is particular; 'it always rains on Sundays' is universal, and would, if true, be a law.

Thus, law, *as law*, does not involve necessity, whatever the popular opinion on the point may be. Order or uniformity may be *conceived* happening by chance; and wherever there is uniformity there is that which may be expressed by a universal proposition—namely, law.

There is, however, the necessity of implication or consistency—the necessity that if a law is true every instance coming under or included in it must be in agreement with it. This is merely logical necessity—the necessity that connects the premisses and conclusion of a syllogism. Thus,

All men are mortal;
Dion is a man;
Dion is mortal;

is an example of the simplest possible syl-

logism. Alter the arrangement a little, but preserve the reasoning,—

All men are mortal; [*Law*]

Dion (being a man) is mortal, [*Instance*]

and the identity will be at once seen.

Or, the necessity might be called '*conditional* necessity.' In explanations of phenomena, the law frequently is not known for certain, but is assumed as a supposition likely to be the right and proper one. If, for example, it is not known for certain that all men are mortal,—

If all men are mortal, [*Hypothesis*]

Dion (being a man) is mortal, [*Fact explained*]

shows that the necessity is conditional.

This logical or conditional necessity is the necessity by which Cause and Effect are connected in our minds. If a law is true, every instance under it is necessarily in accordance with it. If the law of human nature, that all men are mortal, is true, it necessarily follows that you, he, and I are all and each of us mortal. If the law of gravitation, that all bodies approach when there is nothing to prevent them from doing so, is true, it neces-

sarily follows that this stone will fall to the earth unless something prevent. And so with all other instances of causation. The necessity in every one of them is a logical or conditional necessity. We cannot imagine any other sort of necessity. We have never had experience of any other kind, and therefore can no more conceive of such than a man born blind can have ideas of colour.

It is important to remember that the necessity is *conditional*. That is to say, it depends on the assumption of the truth that we attribute to the laws, principles or hypotheses that we lay down in order to explain phenomena. No one can tell absolutely that a law is true; but on the assumption of its truth, the occurrence of certain phenomena is explained by implication.

We cannot for certain (*e.g.*) tell that the law of gravitation is universal. We cannot absolutely know that all the bodies in the universe, without a single exception, are attracted towards each other. But assuming that it is so, by way of hypothesis, astronomical and terrestrial phenomena are explained or deduced, just as a conclusion is drawn from premisses. The necessity connecting the cause

and the effect is logical and at the same time conditional. When it is said that gravitation is the cause of the attraction between the earth and the moon, all that is meant is that one is a case or instance of the other ; thus,

(If) all material bodies attract each other ; [*Law of gravitation*]

(Then) the earth and moon (being material bodies) attract each other. [*Phenomenon*]

The same thing may be seen in all other instances into which the idea of causality enters ; and perhaps in a greater degree. The explaining of the fall of bodies by pointing to the law of gravitation is so extremely simple, that every one sees its nature directly. And for that reason it is, *by itself*, scarcely an instance of the idea of causation. The more complicated the combination of laws (or premisses) the more hidden is the true nature of the necessity ; and, by a curious fallacy of the mind, the stronger the idea of an *unconditional* necessary connection becomes. When an effect is an instance merely of a single law, it is thought not so certain as when many laws form the premisses. That God should cause an event to happen contrary to one law, would be thought a slight miracle in com-

parison with the alteration of an event dependent on a combination of several laws.

Friction is said to cause heat.* In this case, we have simply one event (the rubbing together of two substances), followed by another (the evolution of heat); and the involved idea of necessity or causation is based merely on the observation of such sequence. The notion of necessity here is so far from being deeply rooted in our minds, that very little would be needed to dissipate it. One well-authenticated case of friction being followed by *cold* would be quite sufficient for that purpose.

A similar instance occurs in the proposition, 'Heat causes expansion.' The notion of necessity here, is (among men of science, at least) even fainter than in the former example; for in the case of water between 32° and 40° Fahr. in temperature, heat is accompanied by *contraction*.

The truth is, that in such instances of reputed causation, physicists would guard themselves by saying that the alleged cause

* Example given by Powell: *Nat. and Div. Truth*, p. 88.

is not properly the cause, but *only part thereof*. That the real cause is the sum of all the necessary antecedents. Thus friction is only one of the necessary antecedents of the heat evolved and therefore merely a part of the cause. The same with heat being followed by expansion or contraction. The heat is only part of the cause. If we knew the other parts (*i.e.* the other necessary antecedents), we should understand why heat is accompanied by expansion at one time and by contraction at another.

Thus we do not know *why* material bodies should attract each other, or *why* friction should be accompanied by heat. And therefore we have little, if any, conviction of necessity in relation to these cases. If on the other hand they could be referred to wider laws, our notion of necessity would be greater; if these again could be referred to still wider, our impression of the necessity would be still stronger; and so on.

At first all observations are empirical. After a time, in the progress of discovery, a phenomenon is found to bear a similarity to other phenomena; and they are all classed together. This is the first step in 'explanation.' Further

on, and the whole species is found to agree with another species. This is considered a still more satisfactory explanation; and after a time perhaps the whole genus is found to accord with another genus; and so on. Every new discovery of similarity gives additional satisfaction to the mind in its search after uniformity.

Baden Powell gives a good illustration of this.* “When the suspension of water in the pump was first observed it was ascribed to a cause called *suction*, and in the then state of knowledge, it was not only natural, but inductively correct, to ascribe so singular an effect to a peculiar cause. It was apparently a case *sui generis*. The effect was, perhaps, soon seen to be of the same kind as the suspension of a stone by contact with the under side of a wet leather; there was then one step taken in the process of generalization, by referring both to one common cause, still named suction. Further, the discovery of Torricelli referred the former case to the pressure of the atmosphere; and this was soon seen to include the

* *Nat. and Div. Truth*, p. 90.

explanation of the latter and all other analogous phenomena. And, finally, this was reduced under the still more comprehensive law of universal gravitation."

Much confusion of thought is occasioned by the use of abstract nouns; and it would add greatly to scientific exactness were they all banished, and equivalent phrases used instead. Gravitation, suction, life, inherent principle, property, vitality, power, will, and countless other things, have at one time been, or still are, regarded as causes. Such explanations of phenomena really explain nothing. They are merely cloaks to cover our ignorance. Just think of it. Gravitation the cause of things gravitating. Suction the cause of sucking. Will the cause of volition. Do not such explanations, when divested of sophistical padding, dwindle down to these barren and absurd propositions? Mr. Lewes has some excellent remarks on this head. We might as well, he says, attribute the cause of a watch going to its 'watch-force.'*

Now, were all these abstract terms trans-

* '*Aristotle*,' chap. iv. § 72 b.

lated into their (so to speak) concrete equivalents, their nature would appear in its true light. It would be seen that we know nothing of these things except empirically. That we know nothing of gravitation except that, as a matter of fact, material bodies gravitate. That we know nothing of life, except that living beings live. Of anything else we are profoundly ignorant. The more we learn of nature, the more we see there is to be known, and the more we become acquainted with our own ignorance.

We may see the real nature of the 'explanation' of phenomena in the instance of the raising of water by a pump. In the first place that phenomenon was attributed to 'suction'; which was merely a way of saying that it was a case of a liquid being sucked up or raised. The rise of a liquid through a straw to the mouth was a phenomenon of the same species. Saying, therefore, that 'suction' was a *cause*, only explained the event by a logical necessity. Thus—

(If) under certain circumstances liquids rise. [*Major premiss*]

(Then,) the action of a pump involving such circumstances; and water being a liquid; [*Minor premisses*]

(It follows that) upon the action of a pump, the water rises. [*Conclusion*]

The explanation of the rise of the water by the maxim, 'Nature abhors a vacuum,' was similarly merely a logical deduction:—

(If) Nature always provides against the possibility of a vacuum; [*Major*]

(Then) the way of providing against the existence of a vacuum in a pump, being the rise of the water, [*Minor*]

(It follows that) the water rises in a pump. [*Conclusion*]

An advance was made by the discovery that water could not be raised by a pump, as a rule, to a greater height than 32 or 33 feet, sometimes not higher than 31 feet, and very seldom above 34 feet. This showed the falsity of the hypothesis (or major premiss) that vacua do not exist in nature. The philosophers of the period had accordingly to search for another explanation (*i.e.* find another '*middle term*'). Galileo's solution of the difficulty, namely, that nature abhorred a vacuum *only to the extent of 33 feet*, did not altogether sound satisfactory: and Torricelli was set thinking and experimenting to find out a more likely '*middle term*.' This at length was found;

and the whole species *suctiones*, was seen to belong to the genus *equilibria*. Phenomena of equilibrium, in their turn, are deducible from still wider laws or hypotheses in mechanics;—to speak logically, they are deducible from more general major-premisses;—to speak the language of naturalists, they belong to still higher *genera*.

And so with all other phenomena. Every so-called effect is explained by showing its inference from some law or hypothesis. And many hypotheses may, in their turn, be referred, in the same manner, to wider generalizations or *genera*. The further this process can go, the greater is the satisfaction to our minds—the firmer is our idea of the stability and invariableness of the phenomenon. This is the true ‘necessary connection’ between cause and effect. It is logical necessity—the necessity of implication. Of any other kind of necessity we have no knowledge, and, indeed, not the slightest conception. We can only imagine what we have experienced; and the analysis of causality has shown that the necessity we attribute to events is altogether subjective—the development of logical consistency, and of nothing else.

To sum up. We have no warrant for believing in any causation except hypothetically. For, trace we back the explanation of phenomena ever so far, we must at last come to a stop. And where we stop there is the same ignorance, on our part, as to the truth or the necessity of the law we have arrived at. It is the old Fable of the Elephant and the Tortoise once more. The Earth rests on the Elephant: the Elephant on the Tortoise: the Tortoise on the Serpent. But on what does the Serpent rest? This being unknown, it follows the reason of the Earth's stability is unexplained. Similarly with regard to all supposed necessity in physical events. If the phenomenon A is explained as happening because of the law B, we have to ask, What is the reason of the law B? If it is replied, Because of the law C,—we have further to ask, What is the reason of C? And so on, until at length we come to a law, the reason of which we cannot give. Now the further we go back in this way from phenomena, the more hypothetical and uncertain are the laws or hypotheses at which we arrive; C being more hypothetical and less certain than B,

D being more hypothetical and less certain than C, and so on.

Now, if the laws B, C, D, &c., are merely statements that certain phenomena take place under certain circumstances, they are not causes in the meaning of facts that *compel*, or *make*, or *force*, or *produce* their effects,—any more than the law, All men die, is the cause of any particular person's death.

If, on the other hand, we could trace back laws until we came to one stating that certain phenomena *must necessarily* happen under certain circumstances, then we *should* be able to say we knew the reason of physical events; and then there *would* be the necessity for the occurrence of phenomena.

But it so happens that instead of being able to discover *necessary* laws, we can, in physical events, merely arrive at hypothetical and *contingent* laws that require explaining as much as any particular phenomenon.

We come to the belief or the assumption of physical laws by generalization; and, as none of us are omniscient, it follows that we never know absolutely the truth of a single law of the inductive sciences. The importance of